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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

STULTZ, JESSICA T

ART UNIT PAPER NUMBER

2873

DATE MAILED: 04/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/964,728

Applicant(s)

HOSOE, SHIGERU

Examiner

Jessica T Stultz

Art Unit

2873

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-58 is/are pending in the application.
- 4a) Of the above claim(s) 14-58 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☐ Claim(s) 1 and 3-13 is/are rejected.
- 7) ☐ Claim(s) 2 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on 28 September 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

Art Unit: 2873

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of Group I, claims 1-13, in Paper No. 5 is acknowledged.

Claims 14-58 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper No. 5.

Specification

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

Claims 3, 7, and 10 (and therefore dependent claims 4-6, 8-9, and 11-13) are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Specifically regarding claims 3 and 10, it is unclear as to what the phrase "and/or" defines as a limitation in the claim. It is suggested that applicant change the claim to state "an optical pickup apparatus used for an information recording apparatus or an information reproducing apparatus or both" (this being the assumed meaning for purposes of examination). Further clarification is required.

Specifically regarding claim 7, it is unclear as to what the phrase "of a using wavelength of the light source" defines as a limitation for the roughness of the surface. Applicant is

Art Unit: 2873

presumably meaning, "of a wavelength of a light source used with the optical element" (this being the assumed meaning for purposes of examination).

Claims 4-6, 8-9, and 11-13 are rejected because they inherit the indefiniteness of the claim from which they depend.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 3 are rejected under 35 U.S.C. 102(b) as being anticipated by Ohnishi et al.

Regarding claim 1, Ohnishi et al discloses an optical element capable of transmitting light (Column 12, line 60-Column 13, line 5, wherein the optical element is holographic element "304", Figure 10), comprising: an optical surface having an optical axis (Column 12, line 60-Column 13, line 5, wherein the optical axis is the light path shown by an arrow, Figure 10); diffractive grooves provided on at least a part of the optical surface and each of the diffractive grooves including a first surface capable of being approximated by a predetermined optical function (Column 12, line 60-Column 13, line 5, wherein the optical element "304" is disclosed as being a diffractive element and shown in Figure 10, wherein the grooves are shown, the first surfaces are disclosed as the slanted surfaces of the grooves, which effectively serve as a diffractive surface); a second surface extending in a direction to cross the first surface and being parallel to the optical axis (Column 12, line 60-Column 13, line 5, wherein the second surfaces are the surfaces running parallel to the optical axis and are shown as crossing the first surface,

Art Unit: 2873

Figure 10); and a third surface not approximated by the predetermined optical function and to connect the first surface and the second surface (Column 12, line 60-Column 13, line 5, wherein the third surfaces are shown as being the horizontal edge at the top of the grooves connecting the first and second surface, shown in Figure 10). Regarding the width of the third surface as 0.5% to 15% of the sum of the widths of the first and second surfaces as claimed, the width of the third surface of Ohnishi et al would inherently meet this limitation, this being reasonably based upon what is disclosed in Figure 10. Regardless, while the second surface of Ohnishi et al is disclosed as having a negligible width (the surface parallel to the optical axis of Figure 10), the "first surface" can be considered as any or all of the portion of the slanted surface of Figure 10 such that the width of the third surface is 0.5% to 15% of the sums as claimed. Ohnishi et al does not specifically disclose that the second surfaces run parallel to the optical axis with an angular error not greater than 1 degree. It would be inherent that the second surfaces run parallel to optical axis with an angular error not greater than 1 degree, this being reasonably based upon Figure 10 of the reference and the similarity in structure between the reference and the claimed invention.

Regarding claim 3, Ohnishi et al further discloses that the optical element is a coupling lens for use in an optical pickup apparatus used for an information recording apparatus or an information reproducing apparatus or both (Column 9, line 39-Column 10, lines 9 and Column 12, lines 42-59, wherein the optical element "304" is part of an optical pickup apparatus used for optical disks, Figure 7).

Claims 7, 9, and 11-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Meyers.

Art Unit: 2873

Regarding claim 7, Meyers discloses an optical element capable of transmitting light (Column 5, lines 8-15, wherein the optical element is lens "10", Figure 2), comprising: an optical surface having an optical axis (Shown in Figure 2, as "O.A."); diffractive grooves provided on at least a part of the optical surface and each of the diffractive grooves including a first surface capable of being approximated by a predetermined optical function (Column 5, lines 8-15 and 51-65, wherein the optical element "10" is disclosed as having a diffractive surface "3" and shown in Figure 2, wherein the grooves are shown, the first surfaces are the curved surfaces of the grooves, which effectively serve as a diffractive surface); a second surface extending in a direction to cross the first surface (Column 5, lines 8-15 and 51-65, wherein the second surfaces are the surfaces running parallel to the optical axis "O.A." and are shown as crossing the first surface, Figure 2); wherein a surface roughness R_z of the first surface is not larger than $1/10$ of a wavelength of a light source used with the optical element (Column 17, lines 5-15 and Column 6, lines 61-67, wherein the surface roughness of the diffractive surface "3" is defined as less than $\lambda/10$ RMS, Figure 2).

Regarding claim 9, it would be inherent from Meyers that the second surfaces run parallel to optical axis with an angular error not greater than 1 degree, this being reasonably based upon Figure 2 of the reference and the similarity in structure between the reference and the claimed invention.

Regarding claim 11, Meyers further discloses that the optical element disclosed above wherein the element is an objective lens to converge a parallel light flux parallel to the direction of the optical axis (Shown in Figures 2 and 3).

Art Unit: 2873

Regarding claim 12, it is inherent from Meyers that the optical element disclosed above further include the element is an objective lens used to converge a divergent light flux divergent to the direction of the optical axis, this being reasonably based upon the use of the diffractive surface to converge light to a focal point (Figure 3), even if the light is entering the surface at angles divergent to the optical axis.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohnishi et al in view of Meyers.

Regarding claim 4, Ohnishi et al discloses a diffractive optical element as disclosed above, but does not specifically disclose that the optical element is an objective lens to converge a parallel light flux parallel to the optical axis. However, Meyers teaches of a diffractive optical element disclosed above wherein the element is an objective lens to converge a parallel light flux parallel to the direction of the optical axis (Shown in Figures 2 and 3) so that the light converges on a focal point "F" (Column 6, lines 35-44). Therefore it would have been obvious to one having ordinary skill in that art at the time the invention was made for the diffractive optical element of Ohnishi et al to further be an objective lens to converge a parallel light flux parallel to the optical axis since Meyers teaches of a diffractive optical element disclosed above wherein the

Art Unit: 2873

element is an objective lens to converge a parallel light flux parallel to the direction of the optical axis so that the light can converge on a focal point.

Regarding claims 5, Ohnishi et al discloses a diffractive optical element as disclosed above, but does not specifically disclose that the optical element is an objective lens to converge a divergent light flux divergent to the direction of the optical axis. However, Meyers teaches of a diffractive optical element which is an objective lens which would inherently be used to converge a divergent light flux divergent to the direction of the optical axis, as disclosed above, this being reasonably based upon the use of the diffractive surface to converge light (Figure 3), even if the light is entering the surface at angles divergent to the optical axis. Therefore it would have been obvious to one having ordinary skill in that art at the time the invention was made for the diffractive optical element of Ohnishi et al to further be an objective lens to converge a divergent light flux divergent to the direction of the optical axis since Meyers teaches of a diffractive optical element which is an objective lens which would inherently be used to converge a divergent light flux divergent to the direction of the optical axis, as disclosed above, this being reasonably based upon the use of the diffractive surface to converge light, even if the light is entering the surface at angles divergent to the optical axis.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohnishi et al in view of Maruyama.

Regarding claim 6, Ohnishi et al discloses a diffractive optical element as disclosed above, but does not specifically disclose that the optical element is a collimator lens. However, Maruyama teaches of a forming a diffractive lens surface on the side closer to a conjugate point so that the lens can be used as a collimator lens (Column 15, lines 47-55). Therefore it would

Art Unit: 2873

have been obvious to one having ordinary skill in the art at the time the invention was made for the diffractive optical element of Ohnishi et al to be a collimator lens since Maruyama teaches of a forming a diffractive lens surface on the side closer to a conjugate point so that the lens can be used as a collimator lens.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Meyers.

Regarding claim 10, it is would have been obvious for the optical element to further comprise the optical element be a coupling lens for use in an optical pickup apparatus used for an information recording apparatus or an information reproducing apparatus or both, this being reasonably based upon it being well known in the art of optical pick up apparatuses for diffractive optical elements be used in optical pick apparatuses as objective lenses.

That part of the claim stating "for use in an optical pickup apparatus used for an information recording or reproducing apparatus" is set forth in the preamble and has not been given patentable weight. Furthermore, stating "for use in an optical pickup apparatus used for an information recording or reproducing apparatus" goes to the intended use of the optical device. It has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQ2d 1647 (1987).

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Meyers in view of Maruyama.

Regarding claim 13, Meyers discloses a diffractive optical element as disclosed above, but does not specifically disclose that the optical element is a collimator lens. However, Maruyama teaches of a forming a diffractive lens surface on the side closer to a conjugate point

Art Unit: 2873

so that the lens can be used as a collimator lens (Column 15, lines 47-55). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made for the diffractive optical element of Meyers to be a collimator lens since Maruyama teaches of a forming a diffractive lens surface on the side closer to a conjugate point so that the lens can be used as a collimator lens.

Allowable Subject Matter

Claim 2 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 8 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

The following is an examiner's statement of reasons for allowance: none of the prior art alone or in combination disclose or teach of the claimed combination of limitations to warrant a rejection under 35 USC 102 or 103.

Specifically regarding claims 2 and 8, none of the prior art alone or in combination disclose or teach of the claimed optical element specifically wherein the predetermined optical function is represented by the claimed formula.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kato et al and Ishihara et al are cited as being some similar structure to the claimed invention.

Art Unit: 2873

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jessica T Stultz whose telephone number is (703) 305-6106. The examiner can normally be reached on M-Th 7:30-5, and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on 703-308-4883. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Jessie Dts

Jessica Stultz
April 1, 2003

JMS

JORDAN SCHWARTZ
PRIMARY EXAMINER